

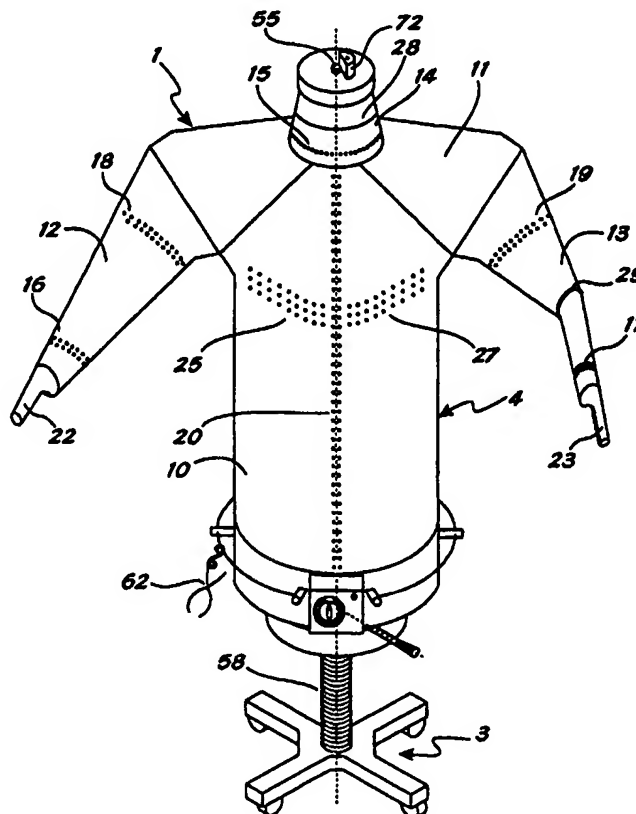
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : D06F 73/00, 59/02	A1	(11) International Publication Number: WO 99/49123 (43) International Publication Date: 30 September 1999 (30.09.99)
(21) International Application Number: PCT/IT99/00068 (22) International Filing Date: 23 March 1999 (23.03.99) (30) Priority Data: FI98A000067 23 March 1998 (23.03.98) IT FI99U000002 8 January 1999 (08.01.99) IT (71) Applicants (for all designated States except US): CAPECCHI, Carla [IT/IT]; Viale Redi, 249, I-50144 Firenze (IT). SQUILLONI, Cristiana [IT/IT]; Via dell'Osteria, 60, I-50145 Firenze (IT). SQUILLONI, Gianna [IT/IT]; Viale Redi, 233, I-50144 Firenze (IT). (71)(72) Applicant and Inventor: SQUILLONI, Gian, Filippo, Maria [IT/IT]; Viale Redi, 249, I-50144 Firenze (IT). (74) Agent: CARUSO, Ercole; Aico Brevetti S.A.S., Via Jacopo Nardi, 30, I-50132 Firenze (IT).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <i>In English translation (filed in Italian).</i>

(54) Title: SMALL HOME EQUIPMENT FOR DRYING AND IRONING CLOTHES, IN STANDING POSITION

(57) Abstract

Small equipment for drying and ironing clothes in a standing position, particularly in home field consisting in dummy-shaped frame comprising a vertical tubular sack which inflates itself countershaping a clothes through the inlet in its internal of warmed air coming from a production means placed at its own base, whose peculiarity consists in the fact that the vertical tubular is a sack having a sole body in non transpiring material having means for allowing the shape of said sack corresponding to that of the clothes to treat. Furthermore means to allow the drying and the ironing of the more difficult areas of the clothes are provided, such as the collar, the sleeves, the breast areas and the buttoning areas.



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Small home equipment for drying and ironing clothes, in standing position.

The present invention relates to a small home equipment which allows at the same time to dry and to iron clothes in standing position.

5 In the Italian patent Squilloni n° 1.278.725 it is described an equipment for ironing and cleaning in standing position, constituted by a dummy-shaped frame on which a transpiring coating is placed, said frame combined with a reclining partially holed table is connected to a box-shaped base inside which a circulation of warm air is obtained through a blower means which, carrying the air from the external, sends it inside the
10 dummy-shaped frame, which is inflatable and fabricable. The ironing and the cleaning are obtained using a separate steam brush provided with a suitable boiler for producing the steam.

Even if the above embodiment achieves relevant advantages according to the prior art, using the equipment, some inconvenients regarding the ironing in a standing position
15 on the dummy of parts of the clothes such as sleeves, jacket collars or shirt collars and trousers legs are however arised.

In the Italian patent Squilloni n° 1.289.843, it is described an implemented equipment for drying, ironing and cleaning which, overcoming the inconvenients arised in the patent Squilloni n° 1.278.725, allows at the same time the drying of the clothes
20 and a first implemented ironing of the whole clothes placed in a standing position, but it needs a further finishing of the ironing on an horizontal table of work.

The described equipment in the patent Squilloni n° 1.289.843 includes a base containing the producing and circulating means of warm air, placed below a top frame on which the clothes are vertically inserted, to which a box-shaped ironing table is
25 connected inside which air circulates, which is conveyed by holes present on its own top face and further it is warmed up and blown in a main, vertical, expansible, tubular sack to which it is possible to connect further secondary sacks to achieve a shape similar to the clothes to treat.

The above described equipments being formed by complex parts, heavy and
30 unwieldy components, are more suitable for an industrial use and to be used by professional personnel, excluding the domestic use.

Main aim of the present invention is to obtain a small equipment for drying and ironing at the same time, to use especially in domestic field, obtained providing the heating and the blow of the air, through means placed at the base of an expansible

counter-shape of the clothes to treat and which is able for the temperature of the blown air, for the flow rate of the same and for the peculiar characteristics of shape and working of the counter-shape of the clothes, to achieve completely the treatment of drying and ironing, included particularly difficult parts such as collars, cuffs, breast collars etc.

5 An other aim is to obtain a small equipment for completely drying and ironing the clothes without using a complementary ironing table as described in the previous patents.

 An other aim is to obtain a small handy equipment whose working position is easy to adapt to the user's height.

10 An other aim is to obtain an equipment for drying and ironing clothes which is easy to adapt to the size of the clothes to treat, through an easy manouvre to carry out at due time.

 Further aim is to obtain an equipment which is easy and unexpensive to manufacture without the use of complex technologies or particularly skilled craftsmanship
15 and which can be sold at a low price, to satisfy the needs of an high number of users.

 These and other aims are achieved by a small equipment for drying and ironing clothes in a standing position and especially in a domestic field which comprises a vertical tubular sack which inflates itself as counter-shape of a clothes through the inlet in its internal of warm air coming from a producing means placed in its own base; said vertical
20 tubular is a one body sack in non-transpiring material having a shape similar to a clothes with sleeves, applied on a supporting frame which can be extended vertically and connects a circular carter containing the producing and the outlet means of the warmed air to a terminal head; said head constitutes at the same time the closing means of the upper opened terminal part of the sack whereas its lower terminal part is closed on the
25 carter to which it is externally constrained; said tubular sack has furthermore holed areas substituted or coupled to inserts of transpiring fabric.

 The sack can furthermore have means fit for reducing its own transversal size in order to change the size of the circumference of the tubular. The number and the position of said changing means of the transversal size will be those necessary according to
30 different kind and size of the clothes which will be treated on the sack.

 The whole set constituted by the sack and the carter is connected to a base which can be extended in height and provided with means for moving it on an horizontal plane.

 The present invention allows to dry and iron clothes positioned on a supporting means, carried out in non-transpiring material having suitable holed transpiring areas,

inside which air comes which is dispensed by suitable blowing means, warmed up passing through means generating heat and being the quantity of air let in inside the supporting means bigger than the quantity of air coming out, the means inflates, so that the clothes is perfectly adherent to it and without folds.

- 5 The presence on the supporting means of holed transpiring areas corresponding to the areas when the relevant thickness of the clothes is present allows to uniform and to reduce the time of drying.

Further characteristics and advantages of the invention will more clearly arise from the following description, made as illustrative but not limitative example, with
10 reference to the attached drawings in which:

- figure 1 is a whole axonometric view of the invention in working position;
- figure 2 is an axonometric view of the internal operating means;
- figures 3, 4, 5 are axonometric exploded views of the operating means
15 as in figures 1 and 2;
- figures 6 and 7 show a frontal view and a rear view of a second embodiment of the invention;
- figures 8 and 9 show respectively a detail of the reducing means of the transversal size of the central body of the invention, in the second embodiment as to
20 figures 6 and 7.

The small equipment of the invention comprises in the top part a supporting body 1 of the clothes to dry and iron constituted by a sack 4 in light and non transpiring material having a shape similar to a clothes with sleeves, by a telescopic rod 7 and by an upper terminal head 8 presenting a lower truncated-cone portion 28; in the central part
25 a carter 2 containing the producing, warming and conveying means of the air inside the supporting body, means basically constituted by a fan and a resistance 5; the carter 2 is upper connected to the supporting body of the clothes through an intermediate body 6 for the convey of the air, constituting at the same time the cap of the production and warming means of the air inside the carter, and lower to a spoke base 3 provided with
30 wheels for its moving.

The sack 4, in the embodiment of the invention, as shown in figure 1, having a shape similar to a clothes with sleeves, has a first, main, almost tubular portion 10 coincident with the bust of the clothes, upper extending in a second portion 11 forming the shoulders, from which, at the sides, two truncated-cone tubulars 12 and 13 project,

which are coincident with the sleeves of the clothes and upper a short tubular appendix with truncated-cone outline 14 coincident with the neck. The lower free terminal part of the two truncated-cone tubulars 12 and 13 has two stiff terminal funnel-shaped portions 22 and 23 acting as closing body of the sleeve.

5 The sack 4 in the thicker areas of the clothes to treat, such as cuffs, breast areas and neck has the same number of areas respectively indicated by numbers 16 and 17 for the cuffs of clothes with long sleeve, 18 and 19 corresponding to the terminal edges of the sleeves of clothes with short sleeve, 15 corresponding to the collar, 25 and 27 corresponding to breast areas and longitudinally corresponding to the vertical buttoning
10 area 20.

To assure a suitable contact of the sleeves of the clothes with the respective truncated cone tubulars 12 and 13 and to avoid their excessive inflation elastic rings are provided, of which only one is represented and indicated by the number 29 in figure 1, to insert in the same sleeve positioning them along it wherever.

15 The sack 4 is airtight on the upper terminal head 8, through its tubular truncated cone appendix 14 fitted on the corresponding truncated cone portion 28 of the same head, whereas the lower terminal part of the tubular portion 10 is constrained to the inlet of the intermediate body 6 through an elastic ring (not shown in figure) which is positioned at its base 26.

20 The intermediate body 6 has a first truncated cone portion 9 whose upper face has four holed areas 32, 33, 34 and 35 divided by four radial stiffenings 42, 43, 44, 45 positioned orthogonally among each other and converging in the center towards a circular hole 46; the four holed areas having the aim of letting the warm air penetrating towards the internal of the sack 4.

25 The carter indicated in its whole with number 2 is constituted by a containing base 38 and by a lid 39, such base houses the production means of the air constituted by a fan wheel provided with blades and operated by an electric motor (not shown in figure), the whole set placed in central position, mounted on a bearing and operated by a control device 21 constituted by a timer which allows to fix the period of time during which the
30 air warmed by the resistance 5 is produced, period of time choosen by the user according to the characteristics of the fabric of the clothes to dry and iron.

The containing base 38 with its perimetral annular band 69 is lower connected to a concave body 36 through the spacers 51, 52, 53 and 54 housed on the respective seats 51a, 52a, 53a, 54a present on the edge of said concave body, inside the base 38 the

plates 40 and 41 having a substantially trapezoidal section are present and simmetrical positioned according to the middle line, on the upper edge of which the square plate 37 is welded, which is connected through a cylindrical pipe 24 to a telescopic rod 7; such cylindrical pipe passes inside the resistance 5.

5 The lid 39 through an upper annular band 49 inserts itself countershaping in the lower part of the truncated cone body 9 to which it is secured.

From the hole 46 of the truncated cone portion 9, the upper terminal part of the cylindrical pipe 24 projects, inside which the telescopic rod 7 inserts itself, from which a pneumatic jack projects of which it is shown in figure 3 the spindle 47.

10 The telescopic rod 7 can be regulated and blocked in a determined position through an usual knob.

The spindle 47 of the telescopic rod 7 has the upper terminal part 48 threaded which allows the blockage to the upper terminal head 8 through the nut 55.

To the cylindrical pipe 70 the threaded rod 73 is welded which passes through
15 a hole 71 present on a first semi-cylindrical block 72 carrying orthogonally to the hole 71 a second cylindrical block (not shown in figure), presenting a shaped portion able to engage itself in the thread of the rod 73, such second cylindrical block is provided with a spring (not shown in figure), which allows its axial displacement, it is therefore possible to lock the upper terminal head 8 in any of the positions reachable by it consequently
20 to the stroke of the spindle 47.

The upper terminal head 8 having the lower truncated cone hollow portion 28 and the upper blind cylindrical cap 56, acts like a cap of the whole equipment, because the air blown by the fan wheel in the sack 4 has as sole outlet the holed areas present on the same sack or the relative areas of transpiring fabric; as the quantity of warm air let in the
25 sack is bigger than the quantity of air that can come out from the holed areas, the same sack maintains itself streched and inflated, being able to constitute the supporting body of a clothes dressed up on it as it is a dummy.

To the supporting base 3 with its spoke foot on wheels 50 is coupled a pneumatic actuator 57 closed inside an expansible tubular 58. On the upper terminal part of the
30 actuator 57 are fixed a disk 59, through a spacer 61, and said concave body 36 having a lever 60 which is the control means of the pneumatic actuator. The body 99 has the holes 101, 102, 103 and 104 which house the spacers 105, 106, 107 and 108, which are interposed between the body 99 and the base 38 of the carter.

The spoke base 3 allows to move the dummy along the bearing plane and to vary

the distance between the bearing plane and the upper terminal part of the same dummy allowing a more comfortable use.

The clothes to dry and to iron, for example a shirt, is overlapped to the sack, with the collar suitable tight blocked on the truncated cone head 8, let it matching to the same sack, regulating the height of the telescopic rod and through the pins 62 which hook its lower edges, fastened to the annular element 63 which is present on the central carter 2; such annular element is constituted by a thin metallic tubular and it is supported by the cylindrical spacers 64, 65, 66 and 67 which anchore it to the base 38 of the carter.

In a different embodiment shown in figure 6 and 7, the sack 4 has in its main, tubular portion 10 corresponding to the bust of the clothes, two vertical, central bands 30 and 31, placed respectively in the frontal area 80 and the rear area 82; said bands are constituted by two respective vertical portions 68 and 78 of the frontal and rear areas of the sack 4; to the longitudinal sides respectively 75, 85 and 76, 86 of said bands 30 and 32 a device for connecting said sides between them is provided, and more particularly said device is constituted by two strips 78, 87 and 79, 89 of strong fabric, provided with teeth 81 which engage and release themselves through the sliding of a little plate (not shown in figure), such as commonly known as a zipper. The connection of said strips - 77 with 87 and 79 with 89 - reduces the width 90 of the area respectively 68 and 78 comprised between them, with consequent reducing of the circumference 91 of the sack 4, reducing which can be obtained only for the frontal portion 80 of the sack or only for the rear portion 82 or together for the both portions.

In this embodiment the so shaped tubular sack is placed on the telescopic rod, said sack ends upper with the truncated cone head 8 which houses the upper opening 18 of the same sack, whereas lower it is inserted on the circular carter 2 to which it is adapted in size and fastened through the stressing and the blockage of a cord 83 sliding inside a channel 84, said channel obtained on the lower edge 88 of said sack. The number of the longitudinal bands and their positioning is not relevant, provided that a possibility of reducing of the tubular sack can be carried out; and it is of no importance that the means for transversally reducing the longitudinal bands are placed externally or inside the same tubular sack.

It is furthermore evident that the choice between the different possibilities of reduction of the circumference of the sack has the advantage to adapt the supporting body of the clothes to dry and to iron to the size of the same clothes.

In this embodiment as in figures 6 and 7 the sack 4, carried out in light and non

transpiring material, has some areas in transpiring material such as the areas 92 and 94 placed at the terminal portions of the sleeves and corresponding to the cuffs, the frontal areas 93 and 95 corresponding to the breast areas, the central areas 96 and 98 on the lower part of the bust, and the rear area 97 corresponding to the shoulders.

- 5 The clothes so placed on the supporting body will be dried by the heat coming from the air in pressure inside the sack and at the same time will be ironed thanks to the stretching of the fibers.

Many different embodiments or implementations are possible without coming out the same inventive concept; for example the body which is countershaped to the clothes
10 can have the shape of a simple sack with neck, or that of trousers, it can furthermore be a completely closed sack which does not need, once it is inflated, the internal support and the upper head; furthermore when it is concerned the treatment of clothes whose fabric is particularly strong, for example jeans, the clothes can support itself being not necessary nor the internal supporting rod nor the supporting sack.

- 15 Furthermore all the details are changeable with others technically equivalent.

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Claims

1. Small equipment for drying and ironing clothes in a standing position comprising a dummy-shaped frame (1) obtained through a vertical tubular sack (4) which inflates itself countershaping a clothes through the inlet in it of warmed air coming from the external and from a production means positioned at its own base characterized by the fact that said tubular sack (4) is a sole body in light, transpiring or non- transpiring material applied on a supporting frame, said supporting frame extending vertically connects a circular carter (2) containing the outlet means of the warmed air to a terminal head (8), said head constituting the closing means of the upper opened terminal part of the sack whereas the other terminal part of said sack is closed on the carter to which it is externally constrained, said tubular sack having a shape similar to a clothes with sleeves presenting holed areas (16 and 17, 18 and 19, 25 and 27, 15, 20) and/or inserts of transpiring fabric (92 and 94, 93 and 95, 96 and 98, 97), said sack (4) placed on said carter (2) connected to a base (3), said base extending vertically provided with means (50) for moving it on an horizontal plane.

2. Small equipment for drying and ironing according to claim 1° characterized by the fact that said supporting expansible frame is constituted by a telescopic rod (7) lower connected to said carter (2) and upper passing inside said terminal head (8) and blocked to it.

3. Small equipment for drying and ironing according to claim 1° characterized by the fact that said sack (4) has an upper annular truncated cone opening (14) such as a neck, said truncated cone opening fit for being counter-shaping inserted on said terminal head (8) having a truncated cone shape.

4. Small equipment for drying and ironing according to claim 1° characterized by the fact that the outlet means and the heating means of the air are constituted by a fan wheel provided with blades operated by an electric motor, said fan wheel and said motor housed in central position in the carter (2) and by at least one resistance (5) positioned above said fan wheel , said outlet and heating means of the air controlled by a timer (21) regulating the time of initiation and blowing out according to the clothes to treat.

5. Small equipment for drying and ironing according to claim 4° characterized by the fact that the outlet and heating means of the air convey said warmed air in the tubular sack (4) through a truncated cone hollow body (9) placed as cap of the carter (2), said body (9) presenting an upper holed face for the passing of the warmed air.

6. Small equipment for drying and ironing according to claim 5° characterized by the fact that the upper holed face of said cap has four areas (32, 33, 34, 35) divided by four radial stiffenings (42, 43, 44, 45) converging in a passing central hole (46), said hole fit for receiving the telescopic rod (7).

5 7. Small equipment for drying and ironing according to claim 1° and any of the previous claims characterized by the fact that the clothes to treat is inserted on the sack (4) with the neck coincident with the truncated cone portion (14) of said sack and the bust part inserted on the central body (10), said clothes lower fastened through elastic pins (62) further connected to an annular element (63) present on said carter, being said
10 clothes perfectly adherent to said sack inflated by the warm air which was let in.

8. Small equipment for drying and ironing according to claim 1° characterized by the fact that said holed areas (16 and 17, 18 and 19, 25 and 27, 15, 20) and/or the inserts of transpiring fabric (92 and 94, 93 and 95, 96 and 98, 97) on said sack are placed corresponding to the cuffs, to the breast areas, to the neck, to the
15 shoulders and to the longitudinal buttoning of the clothes or corresponding to areas when the fabric of the clothes is thicker or when it has more layers or when it is more difficult to dry.

9. Small equipment for drying and ironing according the claim 1° characterized by the fact that when said sack (4) is carried out in non transpiring material
20 has some areas in transpiring material of which at least two placed at the terminal portions of the sleeves corresponding to the cuffs, at least two in frontal position corresponding to the breast areas, at least one in central position in the lower part of the bust, and at least one in rear position corresponding to the shoulders.

10. Small equipment for drying and ironing according to claim 1°,
25 characterized by the fact that the tubular sack (4) in its main portion (10) corresponding to the bust of the clothes, has at least one vertical band (68), placed indifferently on the frontal portion (80) or on the rear portion (82), said band constituted by an area which at its own longitudinal sides has connecting means of said sides, so that when they are connected they reduce the transversal size of said area, allowing consequently a size
30 reduction of the tubular constituting said supporting body.

11. Small equipment for drying and ironing according to claim 1° characterized by the fact that said connecting means of the longitudinal sides of the area of said vertical band (68) are constituted by two strips of strong fabric (75 and 85) provided with teeth (81) which engage and release themselves through the sliding of a

little plate, such as a zipper.

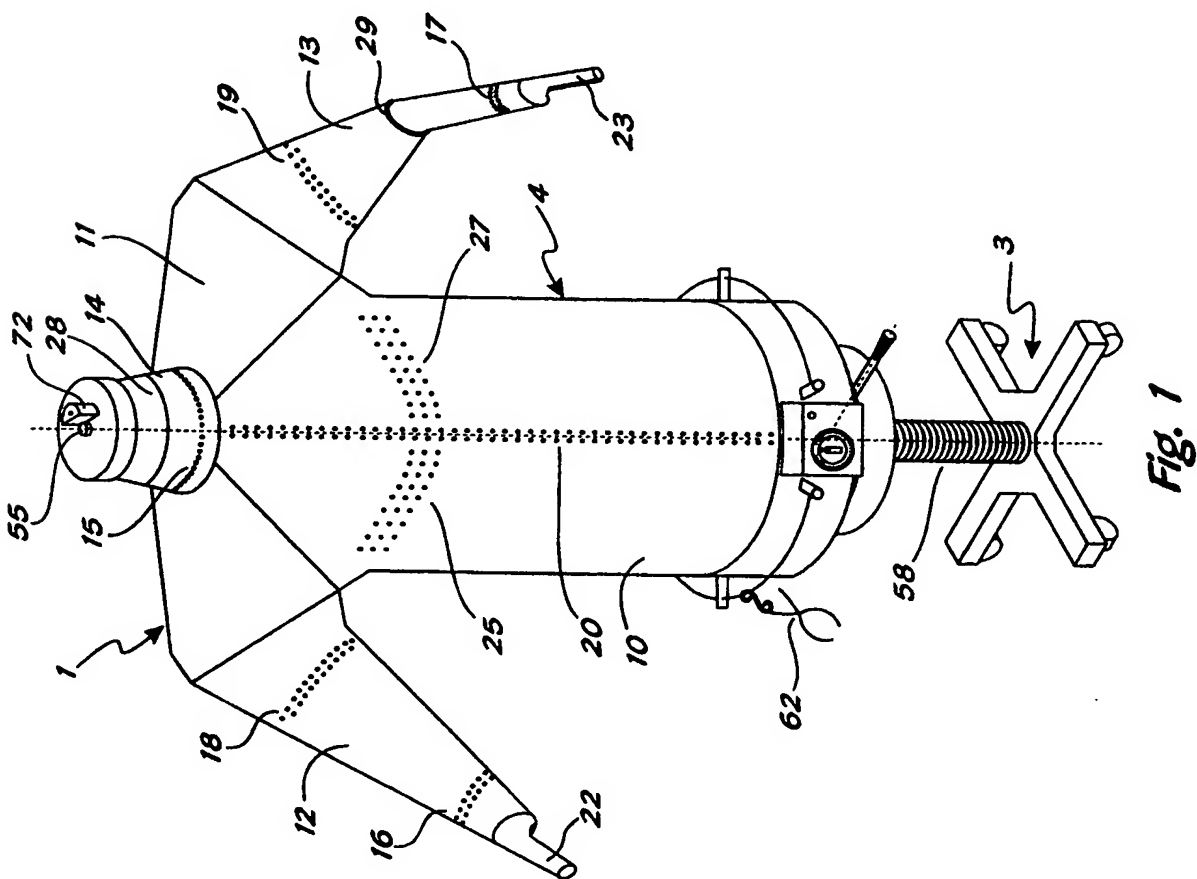
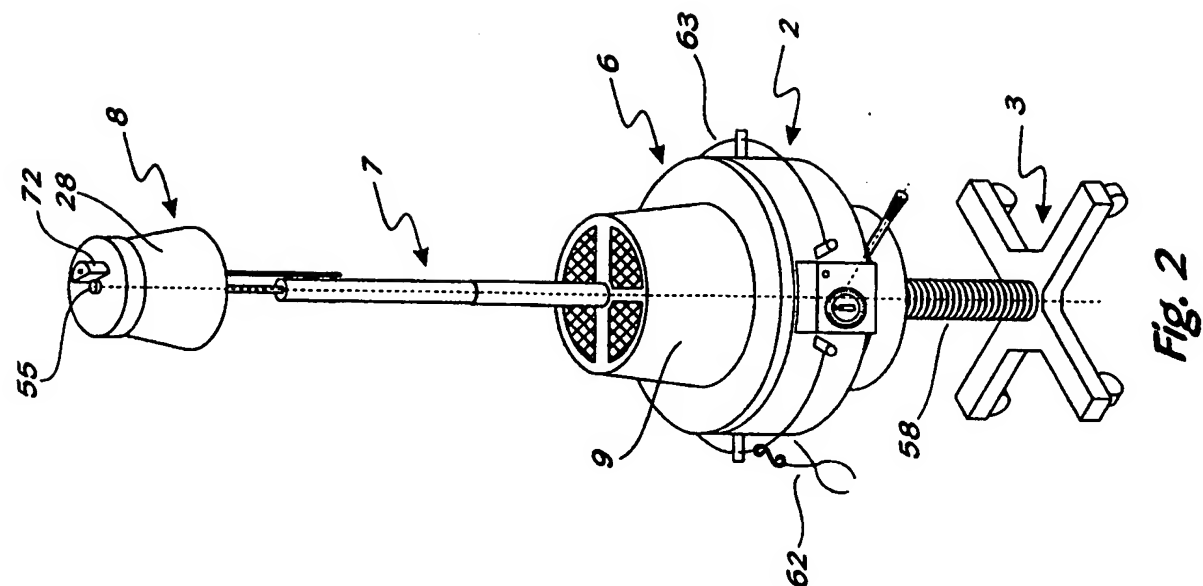
12. Small equipment for drying and ironing according to claim 1° characterized by the fact that it has any number of longitudinal bands in whatsoever positions applied on the external or inside the same tubular provided that they allow
5 through the reduction of the circumference (91) of the sack (4) the adapting of the support to a specific clothes and/or to a determined range of sizes.

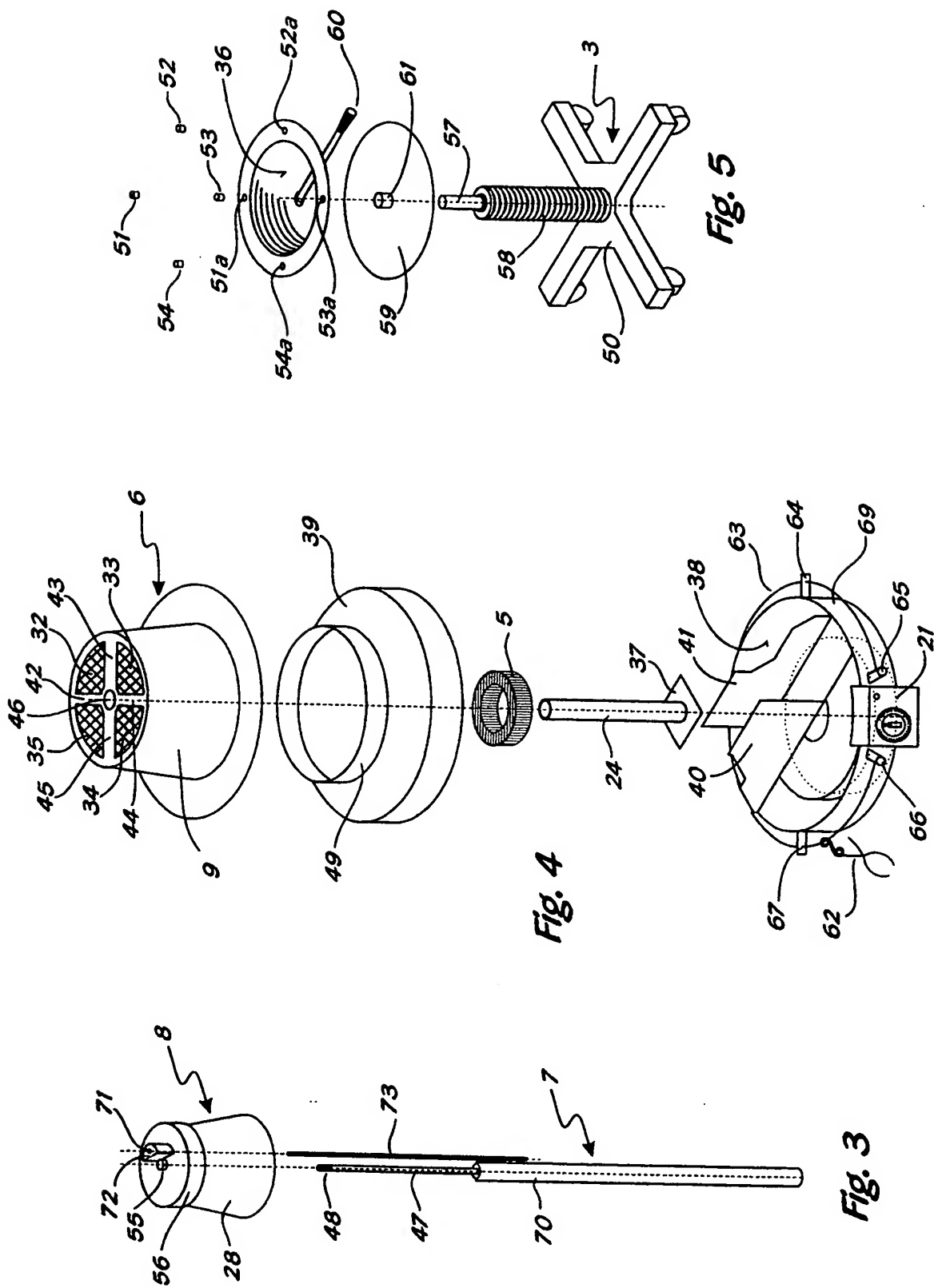
13. Small equipment for drying and ironing according to claim 1° and any of the previous claims wherein the supporting tubular sack (4) is placed on the telescopic rod (7) and it is upper closed by the terminal truncated cone head (8), whereas it is lower
10 inserted on the circular carter and it is fastened to it through the stressing and the blockage of a cord (83) sliding inside a channel (84), said channel obtained on the lower edge of said sack.

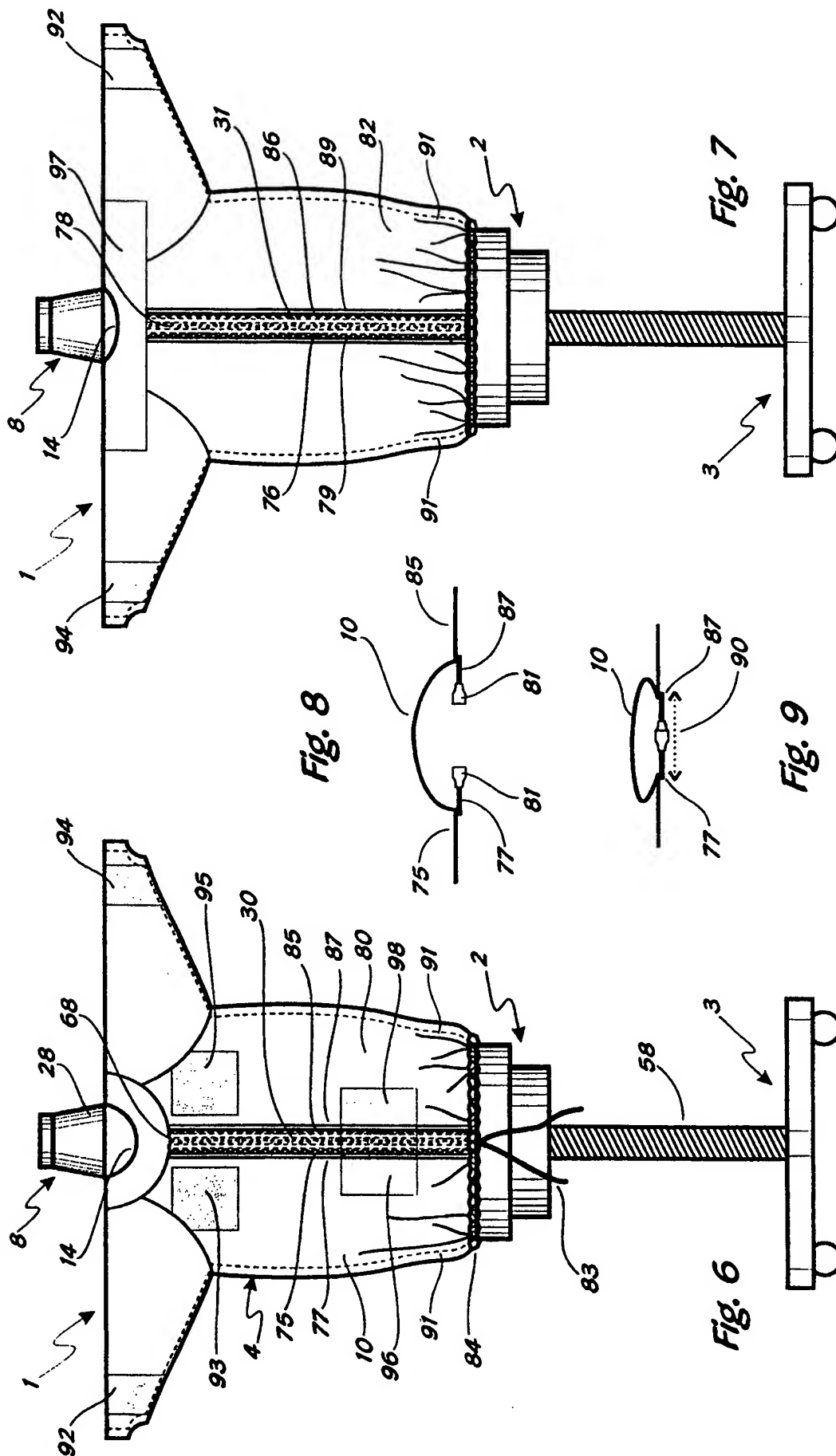
14. Small equipment for drying and ironing according to claim 7° characterized by the fact that in a different embodiment said sack can be a simple sack
15 provided with an opened neck, or it can be an upper closed sack which can support itself once the inflation has been carried out or it can be shaped like trousers for adapting itself each time to the clothes to treat.

15. Small equipment for drying and ironing according to claim 1° and any of the previous claims, characterized by the fact that when clothes having a particularly
20 strong fabric have to be treated, such as jeans, said sack and said expanding supporting frame can be avoided, as said clothes, once inflated, can support by themselves.

16. Small equipment for drying and ironing according to claim 1° and any of the previous claims characterized by the fact that any clothes will be perfectly dried and at the same time perfectly ironed because of the volume, pressure and heating of the
25 air let in said sack or directly in said clothes.







INTERNATIONAL SEARCH REPORT

Intern. Application No

PCT/IT 99/00068

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 D06F73/00 D06F59/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 D06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 048 310 A (DOSAL MARTIN R.) 7 August 1962 (1962-08-07) column 1, line 68 - column 4, line 60; figures 1-18 ---	1,4,8, 10,12, 14,16
A	US 2 587 745 A (MAURER EDWARD C) 4 March 1952 (1952-03-04) column 3, line 29 - column 4, line 52; figures 1,2 ---	1,2,5,6
A	US 3 568 900 A (PARIS AUGUST F) 9 March 1971 (1971-03-09) figures 1,6 ---	1,7
A	DE 35 14 552 A (BRAUN AG) 30 October 1986 (1986-10-30) the whole document ---	1,8,9
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

2 August 1999

Date of mailing of the international search report

13/08/1999

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 5 361 516 A (DAHMAN JOHN A) 8 November 1994 (1994-11-08) the whole document -----	1,15

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Information on patent family members

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